

(12) UK Patent Application (19) GB (11) 2 280 219 (13) A

(43) Date of A Publication 25.01.1995

(21) Application No 9315263.5

(22) Date of Filing 23.07.1993

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(51) INT CL⁶

A47K 13/12, E05D 7/12

(52) UK CL (Edition N)

E2F FPD

E1C C35F5

E2A ACSC A110

U1S S1713

(56) Documents Cited

GB 1529658 A GB 1525567 A GB 1248399 A

(58) Field of Search

UK CL (Edition M) E1C C35F5, E2A AAN ACSA ACSB

ACSC, E2F FPD

INT CL⁵ A47K 13/12 13/26, E05D 3/00 3/02 7/12

(54) Toilet seat hinge

(57) A toilet seat hinge comprises a base mounting 5 for attachment to a toilet bowl 4, and a hinge portion 6 having a horizontally disposed hinge pin 13 for co-operation with a socket 14 in the toilet seat 2. The hinge portion 6 is mounted to the base 5 by a retainer in the form of a cap 7. To mount the toilet seat, the base 5 is attached to the toilet bowl 4. The cap 7 is placed over the hinge portion 6 and the hinge pin located within the socket 14 of the toilet seat. The cap 7 is then positioned over the base 5 so that flanges (10, Fig. 1) of the cap 7 slide between ribs 8 formed on the base 5 until the flanges locate beneath the ribs. The cap 7 is then rotated so that the flanges locate under the ribs.

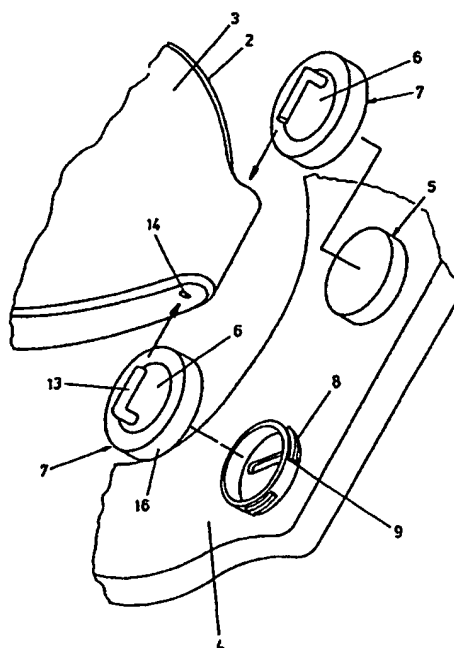


FIG. 2

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At least one drawing originally filed was informal and the print reproduced here is taken from a later filed formal copy.

The claims were filed later than the filing date within the period prescribed by Rule 25(1) of the Patents Rules 1990.

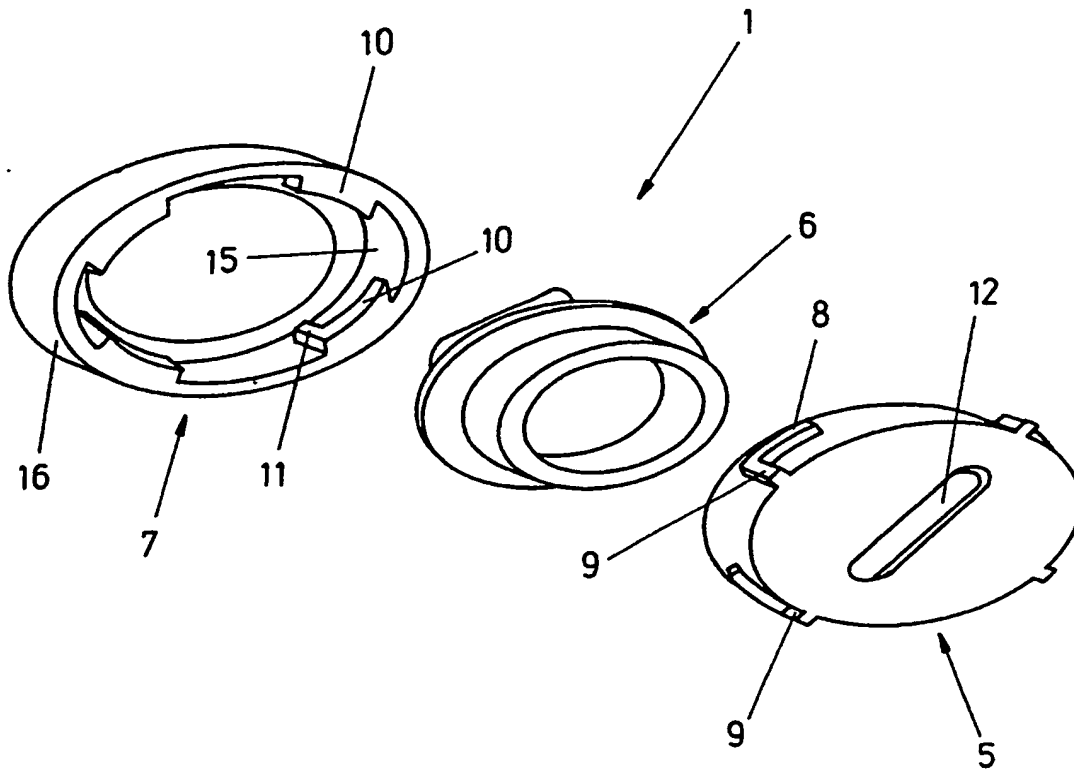


FIG. 1

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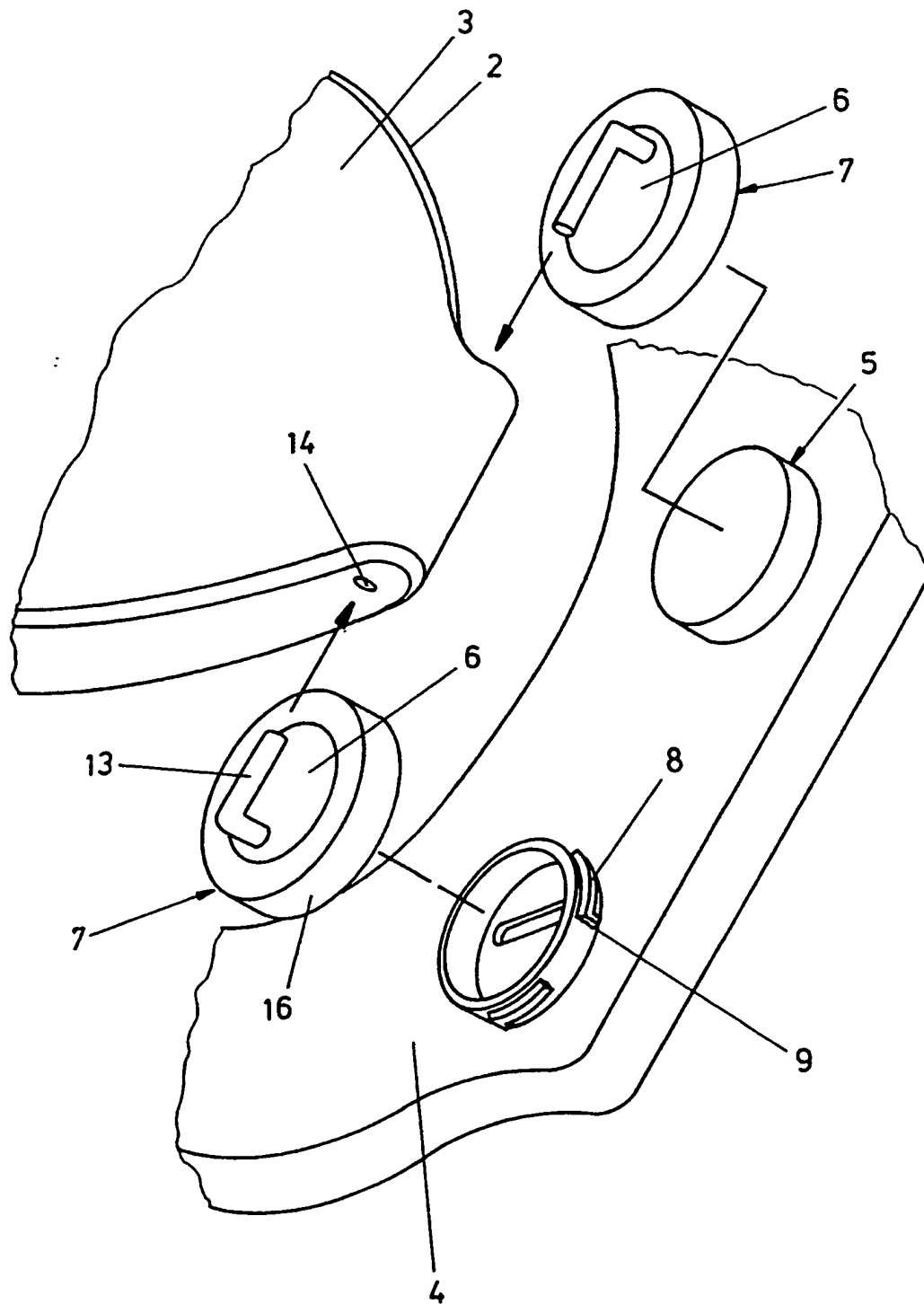


FIG. 2

HINGE ASSEMBLY FOR TOILET SEAT FIXING

The present invention relates to a hinge assembly for releasably mounting a toilet seat, a method of mounting a hinge assembly and a toilet
5 seat incorporating a hinge assembly.

According to one aspect of the present invention in a hinge assembly for releasably mounting a toilet seat on a toilet bowl, the hinge assembly comprises a base mounting arranged, in use, to be attached to a toilet bowl
10 and a hinge portion about which a toilet seat, in use, is arranged to move, the hinge portion being arranged to be detachably mounted on the base mounting by causing turning movement of a retaining portion.

By using turning of a retaining portion to detachably mount the hinge
15 portion on the base mounting an easily operable mechanism which provides good resistance to forces attempting to move the hinge portion relative to the base mounting in a number of directions is provided. Furthermore, the problems associated with a push fit retaining member which must be stiff enough to hold the parts in place and yet lose enough to enable detachment of
20 the parts may be avoided.

The hinge assembly may be arranged to at least partially and possibly substantially conceal the base mounting when the hinge portion is mounted on the base mounting, and the retaining portion may so conceal the base
25 mounting.

With such an assembly, when it is desired to clean the hinge assembly the hinge portion can be detached and cleaned and the base mounting, which

has been concealed and which is not at a convenient location for thorough cleansing, will not require cleaning or will not require as thorough a cleaning as would be the case if the base mounting had been exposed during use of the toilet.

5

The hinge portion may be arranged to be located in position relative to the base mounting by causing downwards movement of the hinge portion relative to the base mounting.

10

By locating the hinge portion in position on the base mounting by causing downwards movement of the hinge portion, the hinge portion can first be mounted on a toilet seat and then subsequently lowered onto the base mounting. Thus the need to simultaneously locate the hinge portion with the base mounting and seat is obviated and the need for the hinge portion to be brought into cooperation with the seat at the relatively in excisable location at the rear of a toilet bowl is obviated.

15

When the hinge portion is mounted on the base mounting movement of the hinge portion away from the part of the toilet seat with which it cooperates may be restricted or prevented. With such an arrangement, the inadvertent movement of the hinge portion out of engagement with the seat is inhibited.

20

The hinge assembly may be arranged to be connected to the base and may be arranged to be indirectly connected to the base.

25

The hinge assembly may include an intermediate portion.

The hinge portion may include a rod arranged, in use, to extend into a socket of a toilet seat.

5 The retaining portion may be arranged to surround the base mounting, when the hinge portion is mounted on the base mounting. The retaining portion may be arranged to restrict fluid flow from the surface of a bowl on which the assembly may be mounted and the base mounting. The assembly may include a seal arranged to be located between a bowl on which the assembly may be mounted and the retaining portion.

10

In use, the retaining portion and the hinge portion may be arranged to substantially cover the base mounting.

15 In use, the hinge portion may be arranged to project upwardly through an opening in the retaining portion.

20 The retaining portion may be arranged to be connected with the base mounting by means of cooperating the screw threads. Alternatively, the retaining portion may be arranged to cooperate with the base mounting by pivotal movement of the retaining portion relative to the base, and such pivotal movement may be arranged to occur without any relative translational movement. Pivotal movement may be arranged to be restricted by parts of the retaining portion and the base mounting abutting each other, and the parts may extend in the general direction of pivotal movement.

25

The hinge portion may be pivotally moveable relative to the retaining portion before the hinge portion is connected to the base mounting and, alternatively or additionally, when the hinge portion is connected to the base

mounting. Such pivotal movement may allow for adjustment of the direction in which the hinge portion extends and the cooperating part of the toilet seat, even though the orientation of the base mounting may be fixed in order that stresses arising out of misalignment may be reduced.

5

The location of the base mounting may be adjustable relative to the bowl in at least one relative translational direction and preferably in at least one further relative translational direction extending at an angle to the first translational direction. The base mounting may also be arranged to occupy one of a plurality of rotational positions relative to the base for a given position of extent of the hinge axis. The base may include a slot to assist in attaching the base to a bowl with provision for adjustment.

15 The assembly may include a pair of spaced base mountings connected together with the pair of hinge portions each being arranged to cooperate with a different one of the bases.

20 According to a further aspect of the present invention a method of mounting a toilet seat on a toilet bowl in order that the seat can hinge relative to the bowl comprises attaching a base mounting of a hinge assembly on a toilet bowl and locating a hinge portion of the hinge assembly to cooperate with the seat and detachably mounting the hinge portion on the base mounting by causing turning movement of a retaining portion.

25 The method may comprise the hinge assembly at least partially or substantially concealing the base mounting.

The method may comprise moving the hinge portion downwardly towards the base mounting when locating the hinge portion relative to the base mounting.

5 The present invention also includes a toilet seat including at least one hinge assembly as herein referred to hinging the seat to the bowl and, alternatively or additionally, a toilet seat incorporating a hinge assembly which has been mounted by a method as herein referred to.

10 The present invention includes any continuation of the herein referred to features or limitations.

 The present invention may be carried into practice in various ways, but one embodiment will now be described by way of example and with reference
15 to the accompanying drawings, in which :-

 Figure 1 is an exploded schematic view from underneath of a hinge assembly 1;

20 Figure 2 is a schematic perspective view from above of a toilet seat 2 and lid 3 having a part of the hinge assembly to be connected thereto about to be brought into engagement with another part of the hinge assembly connected to a toilet bowl 4.

25 The hinge assembly 1 comprises a base 5 arranged to be secured to the bowl 4, an intermediate hinge portion 6, about which the seat and lid pivot, and a cap 7 arranged to be detachably connected to the base.

In use, a pair of bases 5 are fastened to a bowl 4 by passing a nut and bolt (not shown) through an elongate slot 12 in the base and tightening a nut (not shown) onto the bolt from the underside of the bowl to clamp the base firmly onto the bowl. Before the base is clamped firmly onto the bowl, the slot allows the base to be slid relative to the bowl in the direction of extent of the slot. Accordingly the position of the base can be moved from side to side or from back to front by pivoting and sliding the base to ensure accurate location of the base for the seat. As an alternative to the nut and bolt a rawl nut can be used beneath the bowl into which the bolt can be passed and tightened into to retain the base. With the bases clamped to the bowl, the bowl itself can then be manoeuvred and located such that the back of the bowl, and therefore at least one operative part of the nut and bolt, are inaccessible. Thus, in use, the bases may remain permanently attached to the bowl.

15

The cap 7 is of larger diameter than the base and is arranged, in use, to extend around and over the base. The cap may either contact the bowl directly around the base or may trap an annular seal between the base and the bowl. The cap is detachably connected to the base by twisting the cap to bring cooperating parts on each into engagement, when the base is overlapped, to prevent the cap from moving away from the base. These cooperating portions comprise a series of four spaced outwardly projecting arcuate ribs 8 on the base, each of which terminate at one end in an axially extending downwardly projecting flange 9 and four spaced, inwardly extending flanges 10 located on the bottom of the cap (as shown in Figure 1), each of which terminates in an axially extending upwardly projecting rib 11.

20

25

The hinged attachment of the seat 2 and cover 3 to the bowl 4 is achieved as follows.

5 Firstly, the cap 7 is placed over the hinge portion 6, as shown in Figure 2, such that the open end of a horizontally extending rod 13 extends towards a socket 14 extending into the seat and cover. The cap 7 is then moved towards the cover and seat to locate the rod 13 within the socket. The rod 13 of another portion 6 is also moved into the other end of the socket 14 such that the rods extend along a common axis.

10

The seat and the caps 7 are then manoeuvred to bring the caps 7 over the already fixed bases 5. The flanges 10 of the caps slide between the ribs 8 of the base until the flanges 10 are located just beneath the ribs 8 with the flanges 10, either contacting or being closely spaced from the surface of the bowl.

15

The caps 7 are then rotated to cause the flanges 10 to slide under the ribs 8 until the axially extending ribs 11 abut the correspondingly extending ribs 8 to prevent further rotation in that direction. The base is then completely concealed with a skirt 16 of the cap 7 surrounding the base 5.

20

With the lid and seat mounted on the base, the lid and seat can pivot or hinge about the longitudinal axis of the rods 13.

25 The upwardly facing surface of the hinge portion 6 includes an annular band of reduced height (not shown) at its outer extremity. That band is located beneath a narrowed waist 15 of the skirt such that the remainder of the

upwardly facing surface of the hinge portion can be generally flush with the corresponding surface of the cap, as shown in Figure 2.

5 In the illustrated embodiment, the cap 7 is shown as being able to undergo a limited amount of relative rotation. In a further alternative, the cap and base can be screwed together by providing screw threads on their overlapping surface.

10 In a further alternative, (not shown) instead of two separate bases being provided, a common base member may be provided which is arranged to receive both of the caps.

15 Removal of the lid and base is achieved by reversing the above described sequence of operations. In the removed position, the lid and seat can be separated for replacement or cleaning as required.

20 It will be appreciated that attachment or removal of the lid and seat can be achieved without the need to gain access to parts beneath the bowl. Thus the hygiene of a toilet can be maintained even where the rear of a bowl is concealed from above. Furthermore, as the base is completely concealed when the seat and lid are mounted, the exposed parts of the hinge assembly can be removed for convenient cleaning without significant cleansing of parts remaining on the bowl and without the remaining parts having any intricate concealed portions which cannot be easily wiped.

CLAIMS

1. A hinge assembly for releasably mounting a toilet seat on a toilet bowl, the hinge assembly comprising a base mounting arranged, in use, to be attached to a toilet bowl and a hinge portion about which a toilet seat, in use, is arranged to move, the hinge portion being arranged to be detachably mounted on the base mounting by causing turning movement of a retaining portion.
2. An assembly as claimed in Claim 1, in which the retaining portion is arranged to at least partially conceal the base mounting.
3. An assembly as claimed in Claim 1 or 2, in which the hinge portion is arranged to be located in position relative to the base mounting by causing downwards movement of the hinge portion relative to the base mounting.
4. An assembly as claimed in any preceding Claim, in which the hinge assembly is arranged to be connected to the base.
5. An assembly as claimed in any preceding Claim, in which the retaining portion is arranged to surround the base mounting when the hinge portion is mounted on the base mounting.
6. An assembly as claimed in any preceding Claim, in which the retaining portion and the hinge portion are arranged to substantially cover the base mounting.

7. An assembly as claimed in any preceding Claim, in which the hinge portion is arranged to project upwardly through an opening in the retaining portion.

5 8. An assembly as claimed in any preceding Claim, in which the retaining portion is arranged to be connected with the base mounting by means of cooperating screw threads.

10 9. An assembly as claimed in any of Claims 1 to 7, in which the retaining portion is arranged to cooperate with the base mounting by pivotal movement of the retaining portion relative to the base with such pivotal movement being arranged to occur without any relative translational movement.

15 10. An assembly as claimed in any preceding Claim, in which the hinge portion is pivotally movable relative to the retaining portion before the hinge portion is connected to the base mounting.

20 11. An assembly as claimed in any of Claims 1 to 9, in which the hinge portion is pivotally movable relative to the retaining portion when the hinge portion is connected to the base mounting.

25 12. An assembly as claimed in any preceding Claims, in which the location of the base mounting is arranged to be adjustable relative to the bowl in at least one relative translational direction.

13. An assembly as claimed in any preceding Claim, in which the base mounting is arranged to occupy one of a plurality of rotational positions relative to the base for a given position of extent of the hinge axis.

13. A hinge assembly for releasably mounting a toilet seat on a toilet bowl substantially as herein described with reference to, and as shown in the accompanying drawings.

5 15. A method of mounting a toilet seat on a toilet bowl in order that the seat can hinge relative to the bowl comprising attaching a base mounting of a hinge assembly on a toilet bowl, and locating a hinge portion of a hinge assembly to cooperate with the seat and detachably mounting the hinge portion on the base mounting by causing turning movement of a retaining portion.

10

16. A method as claimed in Claim 15, comprising causing the hinge assembly to at least partially conceal the base mounting.

15 17. A method as claimed in Claim 15 or 16, comprising moving the hinge portion downwardly towards the base mounting, when locating the hinge portion relative to the base mounting.

20 18. A method of mounting a toilet seat on a toilet bowl substantially as herein described with reference to, and as shown in the accompanying drawings.

19. A method as claimed in any of Claims 15 to 18 when using a hinge assembly as claimed in any of Claims 1 to 14.

Patents Act 1977
Examiner's report to the Comptroller under Section 17
(The Search report)

Application number
GB 9315263.5

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Relevant Technical Fields

- (i) UK Cl (Ed.M) E2A (ACSA, ACSB, ACSC, AAN); E2F (FPD); E1C (C35F5)
- (ii) Int Cl (Ed.5) A47K (13/12, 13/26); E05D (3/00, 3/02, 7/12)

Search Examiner
S J CHURCH

Date of completion of Search
26 AUGUST 1994

Databases (see below)

- (i) UK Patent Office collections of GB, EP, WO and US patent specifications.

Documents considered relevant following a search in respect of Claims :-
1-19

(ii)

Categories of documents

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|---|---|
| X: Document indicating lack of novelty or of inventive step. | P: Document published on or after the declared priority date but before the filing date of the present application. |
| Y: Document indicating lack of inventive step if combined with one or more other documents of the same category. | E: Patent document published on or after, but with priority date earlier than, the filing date of the present application. |
| A: Document indicating technological background and/or state of the art. | &: Member of the same patent family; corresponding document. |

Category	Identity of document and relevant passages	Relevant to claim(s)
X	GB 1529658 A (PAG PRESSWERK) whole document but see page 3 lines 17 to 38 in particular	1,4,6,9,15 & 16
X	GB 1525567 A (LANGRIDGE) whole document	1-4,6,8,10 15,16 & 17
X	GB 1248399 A (IDEAL-STANDARD) see Figures 10 to 12 and page 2 line 129 to page 3 line 60	1-4,9,10,11 15,16 & 17

Databases:The UK Patent Office database comprises classified collections of GB, EP, WO and US patent specifications as outlined periodically in the Official Journal (Patents). The on-line databases considered for search are also listed periodically in the Official Journal (Patents).